

## REMARKS

Entry of this amendment is respectfully requested.

Claims 31-43 were rejected under 35 U.S.C. §103(a) for allegedly being unpatentable over Doliwa in view of Coyle. Claims 44 and 45 were rejected under the same statute over Doliwa, Coyle and Jones. Claims 46-48 were rejected under this statute over Doliwa and Coyle. Applicants respectfully traverse each of these rejections.

In claim 1, Doliwa discloses:

1. A method of producing homogeneous cast-iron melts from a heterogeneous charge containing steel scrap, comprising the step of adding to the melt a compact comprising a component selected from (1) silicon carbide, (2) ferrosilicon, calcium silicon, ferrochromium, ferromanganese, ferrophosphorus, iron chips, or steel chips, and (3) a slag forming admixture from the ternary system 8-18% CaO-10-40% SiO<sub>2</sub>-16% Al<sub>2</sub>O<sub>3</sub>. which compact also contains a hydrocarbon or hydrocarbon-nitrogen compound selected from naphthalene, anthracene, pyrene, carbazol, phenylnaphthylcarbazol, and anthraquinone in an amount of 0.5 to 40% per compact.

The presently claimed process differs from Doliwa's disclosed method in that the claim method only uses one kind of the mentioned components and, moreover, the claim relates to the use of plastic and not simply a hydrocarbon or hydrocarbon-nitrogen compound.

The main difference between the claimed invention and the cited state of the art resides in the different goal. The

"... advantage of the process according to the invention is that the plastic not only serves as a vehicle for the flux, but can also act as a reducing agent and/or energy carrier (partially replacing heavy oil or coal). In the case where the flux contains titanium, especially synthetic titanium compounds, the plastic contributes in the hot liquid melt to the desired formation of titanium carbides and, if the element nitrogen is present, titanium nitrides and titanium carbonitrides. These compounds improve the refractory properties of the furnace wall in e.g. furnace systems." (see specification, p.5, sec. paragraph)

Coyle discloses:

1. A melting unit additive, said additive comprising  
  
a titanium containing material in heat reducible finely divided form selected from the group consisting of powder, shavings, turnings and chip physically intermixed with  
  
a solid non-titanium additive material selected from the group consisting of silicon carbide, ferro silicon, ferro manganese, ferro chrome, and combinations thereof,  
  
said mixture being formed into a coherent mass capable of being charged into a melting unit for nodularizing and physical property enhancement.

Furthermore:

A suitable binder is then normally added to the mixture of silicon carbide and titanium containing material. One satisfactory binder is portland cement. Preferably a high early strength cement, which is also known as Type III cement (described by ASTM-150-63) is employed. This binder contains, its primary constituents, the following materials, which are set out as a representative analysis. (see Coyle, col. 3, lines 42 to 48).

Because the only binder mentioned in the entire document is cement, the combination of Doliwa in view of Coyle does not render the presently claimed invention obvious. Neither naphthalene or carbozol are regarded as plastics.

Moreover, according to Coyle:

Titanium is generally recognized as a desirable addition to gray iron, particularly because of its tendency to reduce pin holes and gas holes in iron castings. Specifically, it removes nitrogen and oxygen and thereby tends to reduce, if not, substantially eliminate, pin holes and gas holes. Titanium is considered to be a potent graphitizer in that it causes the flake graphite to precipitate in a better distribution pattern. Titanium acts as a

scavenger for nitrogen and tends to eliminate pin holes in iron castings since an inert titanium nitride is precipitated which is generally recognized as a harmless inclusion. Titanium further promotes the formation of a finer grain structure, sounder castings, and improves physical properties, particularly strength and machinability. It is likewise generally recognized that small quantities of titanium decrease the chilling tendency. (see Coyle, col. 2, lines. 25 to 41).

Coyle use the titanium additive as a grain finer for an improvement of the strength and machinability of iron castings as well as an eliminator of pin holes and gas holes of that iron castings.

Jones states that the goal for his invention as follows:

The present invention is directed to providing an optimal composition for achieving desired properties in a steelmaking slag within an electric arc furnace, including the creation of appropriate basicity and chemistry for optimal foaming at each stage of the process, as well as a method and system for accomplishing the optimal composition. (see Jones, col. 1, lines 23 to 27).

Jones further describes that:

The oxygen injection location 50 represents the available gaseous oxygen that can be injected into the furnace body, as is known in the art. The material insertion vehicle 60 may be an injection lance by which solid materials A, B, or C can be added to the furnace volume by a carrier gas, as is known in the art. Alternatively any other means known in the art can be used to introduce materials, A, B, or C to the slag within the furnace. (see Jones, col. 6, lines 53 to 60.)

Methods of introducing a flux into a liquid melt are known; however, it is respectfully submitted that it is new and inventive to bind the components of a flux with a plastic and grinding this product to the presently claimed particle size.

Furthermore, Jones provides no hint or suggestion that a titanium containing material should be a component of the flux, that a plastic should be used as a binder and that the plastic function as reducing agent and/or energy carrier and carbon and/or nitrogen source for the formation of titanium carbide, titanium nitride or titanium carbonitride.

Claims 31-37 and 39-48 were rejected under 35 U.S.C. §103(a) over Neuer in view of Coyle. Applicants respectfully traverse.

Neuer discloses his object as follows:

The object of the invention is to create an agent of the above-mentioned type with a wire filling whose special admixtures split off gas at the application temperatures and thus cause the formation of turbulence in the metal bath which leads to a homogenization of the melt without having a detriment effect on the composition of the melt. (see Neuer, col. 2, lines 14 to 20).

Therefore Neuer disclose as the advantage of his invention:

The agent according to the present invention is primarily used for homogenizing, refining and short-term cooling of metal melts. Melts of iron and steel come into consideration as the metal melts. (see Neuer, col. 2, lines. 62 to 65).

With respect to the addition of titanium is mentioned it is regarded as a microalloying element:

The agent according to the present invention is also suitable for alloying metal melts by introducing microalloying elements such as titanium, molybdenum, boron and others. For this type of application, these elements, or compounds which release these elements under the melting conditions, are provided in the wire filling.-(see Neuer, bridging paragraph col. 2 to 3).

Neuer does not disclose a plastic bound flux even in view of Coyle. The presently claimed invention could not be obvious because Coyle disclose the addition of a titanium containing material for a different purpose.

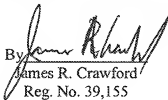
The arguments presented by the Examiner regarding the obviousness to a man skilled in the art for introducing titanium containing material into polyethelene granules is merely an inadmissible hindsight approach. There are no reasons given why a skilled artisan should combine the various cited references, as all the cited references point in different directions.

In view of the foregoing, allowance is respectfully requested.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-0624, under Order No. NY-DNAG-320-US.

Respectfully submitted

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